DOCTORAL STUDY ON JOSIP JURAJ STROSSMAYER UNIVERSITY OF OSIJEK: ACHIEVEMENTS AND CHALLENGES

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1. INTRODUCTION

Universities have the main responsibility for the development of high quality doctoral programs. Providing training in through research is one of their core tasks, both to prepare young researchers for careers in academia but also increasingly to be able to play a significant role in other areas of society, be it in the public sector or other research agencies, in industry, commerce or service sector. This requires autonomous institutions able to act responsible, and develop and implement institutional strategies for doctoral programs in a number of different areas.

Being a transitional economy, Croatia has placed significant efforts to create a market-oriented economy and political democracy after abandoning socialism and commanded economy in 1991. Its aspirations to further develop in political and economic sense and to become a member of the European Union (EU) should be supported by improvement of higher education and utilization of its benefits on (economic) development. According to demographic criteria, number of universities and percentage of GDP invested in higher education, Croatia does not significantly lag behind other countries in the region. However, the small percentage of highly educated population (7%) and the modest macroeconomic performance of the country suggest that Croatian higher education seems to be underutilized source of economic development of the country. Thus, it is of great importance to encourage Croatian universities to develop and grow in their teaching and scientific activities in accordance to European and international standards.

This paper focuses on Josip Juraj Strossmayer University of Osijek, which is the only university in the Eastern part of Croatia and which assumes the important role in the regional economic and social development. In the context of European and global integration processes, this paper reviews some of statistical data of Josip Juraj Strossmayer University of Osijek (hereinafter: University of Osijek) and discusses the most important and challenging part of higher education – doctoral program, which set up in accordance with ten Salzburg Principles on doctoral programs that provided the bases for Bergen Communiqué text. The paper concludes with some policy suggestions how to advance doctoral programs in order to meet the challenges of contemporary economic and social reality.

2. THE IMPORTANCE OF DOCTORAL POGRAMMES FOR EUROPEAN HIGHER EDUCATION AND RESEARCH

Promoting "closer links between the European Higher Education and Research Areas as a means of strengthening Europe's research capacity, and improving the quality and attractiveness of European higher education" has been a major priority for the European University Association (EUA) since 2003[1]. These objectives have been translated into action through a focus on doctoral programs and researcher careers that led to the adoption of the Salzburg principles in February 2005 that have become the framework for the intensive discussion on the development and future direction of doctoral programs that has been gathering momentum over the last two years.

Crowing awareness of the importance for Europe of increasing its research potential and the increasing spotlight on the role of universities as the providers of doctoral programs and responsible for providing the unique environment in which young researchers are trained by and through research, has served to highlight still further the crucial role of doctoral programs for Europe.

The Bergen Communiqué

Specifically in relation the Bologna Process, the Ministers meeting in Bergen in May 2005 recognized that in order to *improve the synergies between the higher education sector and other research sectors and between the EHEA and the European Research Area* "doctoral level qualifications need to be fully aligned with the EHEA overarching framework for qualifications using the outcomes-based approach. The core component of doctoral training is the advancement of knowledge through original research. Considering the need for structured doctoral programs and the need for transparent supervision and assessment, we note that the normal workload of the third cycle in most countries would correspond to 3-4 years full time. We urge universities to ensure that their doctoral programs promote interdisciplinary training and the development of transferable skills, thus meeting the needs of the wider employment market. *We need to achieve an overall increase in the numbers of doctoral candidates taking up research careers within the EHEA.* We consider participants in third cycle programs both as students and as early stage researchers."[2]

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[1] Communiqué of the Conference of Ministers responsible for Higher Education: Realizing the European Higher Education Area, Berlin, 19th September 2003, available at http://www.eua.be/fileadmin/user_upload/files/Quality_Assurance/OFFDOC_BP_Berlin_communique_final.1066741468366.pdf

[2] Communiqué of the Conference of European Ministers Responsible for Higher Education: The European Higher Education Area - Achieving the Goals, Bergen, 19-20 May 2005, available at http://www.eua.be/fileadmin/user_upload/files/Quality_Assurance/050520_Bergen_Communique.pdf

Two projects have been set up related to the doctoral program: (1) *Development of the Salzburg Principles* and (2) *Doctoral careers* which deal with the employability of doctoral candidates.

3. DOCTORAL PROGRAMS IN BOLOGNA PROCESS

Doctoral programs are the third cycle of the Bologna process and at the same time constitute the first phase of a young researcher's career.

The core component of the third cycle is the advancement of knowledge through original research. This makes the third cycle unique and different from the first and second cycles. For this reason the doctoral training phase constitutes the main link between the European Higher Education Area (EHEA) and the European Research Area (ERA). High quality doctoral programs are crucial in achieving Europe's research goals.

The specific character of the third cycle needs to be taken into consideration in the Bologna context. However, this does not mean that doctoral programs should be seen in isolation, but rather as part of a continuum, closely linked to and following on from the first and second cycles, and in the context of the implementation of the three Bologna cycles as a whole. It is important for all institutions offering research based higher education to ensure that a research component is included and developed in all cycles thus allowing students to acquire research experience and encouraging an interest in research as a possible career. Particular attention should be paid to the articulation between the second and third cycles. This applies also in relation to the acquisition of transferable skills.

4. THE ROLE OF UNIVERSITIES

Universities have the main responsibility for the development of high quality doctoral programs. Providing training in and through research is one of their core tasks, both to prepare young researchers for careers in academia but also increasingly to be able to play a significant role in other areas of society, be it in the public sector or other research agencies, in industry, commerce or the service sector. This requires autonomous institutions able to act responsibly, and develop and implement institutional strategies for doctoral programs in a number of different areas.

The Josip Juraj Strossmayer University of Osijek (hereinafter: University of Osijek) has a main responsibility in development of the qualitative doctoral program in the Eastern part of Croatia. Conducting training through research is also the main goal to prepare students for the university career or to be able to play a significant role in the society in the various business sectors. That requires an existence of autonomous institution which is able to develop and apply institutional strategies for the doctoral programs in various areas.

Doctoral studies are oriented towards education of higher institutions' scientific novices, scientific institutes, as well as other institutions interested. Thus, the University of Osijek places an emphasis on high quality scientific researchers at the level which corresponds to the European and world standards.

Salzburg Principles 1

The core component of doctoral training is the advancement of knowledge through original research. In fulfilling its assignment, University of Osijek relies on the following potential of its faculties:

- In the academic year of 2007/2008, the University of Osijek comprises 16 units of higher education, i.e. eleven (11) faculties, one (1) Academy and three (3) university departments, as well as three infrastructural institutions and one company in the ownership of the University of Osijek, County of Osijek-Baranya and the City of Osijek.
- Osijek's academic community today (in the year of 2008) has 21,000 members out of which 880 scientists, teachers and associates and 150 scientific novices have been educated and trained for the scientific work. University units employ 433 professional, administrative, technical and other staff while the university infrastructural institutions have altogether 208 employees.

Table 1 Number of enrolled students in the academic year of 2006/2007 (all study years and graduates)

University institution	FULL TIME STUDENTS	PART TIME STUDENTS	TOTAL	∑ AT UNIVERSITY STUDIES	∑ AT VOCATIONAL STUDIES
FACULTY OF ECONOMICS	2486	2153	4639	3218	1421
FACULTY OF ELECTRICAL ENGINEERING	1392	260	1652	1021	631
FACULTY OF ARTS AND SCIENCES	1489	0	1489	1489	0
FACULTY OF CIVIL ENGINNERING	779	271	1050	635	415
EVANGELICAL THEOLOGICAL SEMINARY	251	0	251	251	0
FACULTY OF MEDICINE	661	70	731	436	295
FACULTY OF AGRICULTURE	1310	285	1595	1054	541
FACULTY OF LAW	1799	1830	3629	2751	878
FACULTY OF FOOD TECHNOLOGY	619	0	619	619	0
MACHANICAL FACULTY	365	224	589	468	121
FACULTY OF TEACHER EDUCATION	859	0	859	632	227
ART ACADEMY	186	0	186	186	0
DEPARTMENT OF MATHEMATICS	446	0	446	446	0
DEPARTMENT OF BIOLOGY	209	0	209	209	0
DEPARTMENT OF PHYSICS	152	0	152	152	0
TOTAL OF STUDENTS	**13003**	**5093**	**18096**	**13568**	**4528**

Source: J.J. Strossmayer University of Osijek's Report for the academic year 2006/2007, Osijek, June 2008

In the academic year of 2005/2006 there were altogether 16,922 students enrolled at the University of Osijek, and the number of students increased in the following academic year of 2006/2007 by 6,43%, reaching the number of 18,096 students. In the academic year of 2007/2008 the number of students at the University of Osijek increased to 19,153.

Table 2 Number of scientists, teachers and associates at the University of Osijek in the academic year of 2006/2007

University unit	Full Professor	Associate Professor	Assistant Professor	Senior Lecturer	Lecturer	Professor of school of professional	Senior lector	Lector	Senior Assistant	Assistant	Professional Associate	TOTAL
Faculty of Economics	17	9	6	5	0	0	0	0	0	26	1	64
Faculty of Electrical Engineering	8	4	7	7	3	0	0	0		12	2	43
Faculty of Arts and Sciences	10	14	19	4	5	0	2	3	2	44	0	103
Faculty of Civil Engineering	9	5	12	8	4	2	0	0	0	15	0	55
Evangelical Theological Semminary	2	1	7	1	1	0	0	0	4	5	0	21
Faculty of Medicine	12	23	47	0	3	0	0	0	5	34	0	124
Faculty of Agriculture	33	18	20	5	5	0	0	0	2	22	6	111
Faculty of Law	6	2	8	6	1	0	0	0	4	7	0	34
Faculty of Food Technology	9	7	9	1	1	0	0	0	2	13	1	43
Mechanical Faculty	12	5	8	4	3	0	0	0	2	3	2	39
Facul. of Teacher Education	1	2	6	6	2	1	0	0	2	10	1	31
Art Academy	1	2	7	3	1	0	0	0	0	5	0	19
Department of Mathematics	2	1	4	0	1	0	0	0	0	9	0	17
Department of Physics	1	0	5	0	0	0	0	0	0	4	0	10
Department of Biology	0	2	7	0	0	0	0	0	1	10	4	24
Department of Chemistry	0	1	4	0	1	0	0	0	0	5	1	12
TOTAL	123	96	176	50	31	3	2	3	24	224	18	750

Source: J.J. Strossmayer University of Osijek's Report for the academic year 2006/2007, Osijek, June 2008

Table 3 Universities as foreign partners to the University of Osijek (signed Contract for the international cooperation)

COUNTRY	UNIVERSITY
Austria	BOKU Vienna
Bosnia and Herzegovina	University of Tuzla
	University of Mostar
	University of Sarajevo
	University of Bihać
Czech Republic	University of South Bohemia, Ceske Budejovice
Italy	Università degli Studi di Udine
Hungary	University of Kaposvar
	University of Pécs
	Berzsenyi Daniel College Szombathely
Norway	Agricultural University of Norway in Aas
Germany	Universität Augsburg
	Fachhochschule Pforzheim
	Fachhochschule Bremen
	Fachhochschule Giessen-Friedberg
	Universität des Saarlandes
	Fachhochschule Albstadt-Sigmaringen
Poland	Adam Mickiewicz University in Poznan
Romania	University of Agricultural Sciences and Veterinary Medicine of Cluj-Napoca
Russia	St. Petersburg State Theatre Arts Academy
USA	Rutgers University, The State University of New Jersey
Slovakia	University of Trnava
	SS. Cyril i Methodius University of Trnava
Slovenia	University of Maribor University of Ljubljana
Sweden	Jönköping University
Turkey	Harran University
	Egge University-Izmir
Ukraine	Kherson State University

Source: J.J. Strossmayer University of Osijek's Report for the academic year 2006/2007, Osijek, June 2008

Scientific-research activity

Scientific-research activity is based upon the scientific and research work of scientists at the higher education institutions within the scientific projects and training of scientific novices. Scientific-research activity of the University of Osijek is realized through six (6) area of sciences: natural sciences (Department of Mathematics, Department of Physics, Department of Biology and Department of Chemistry), technical sciences (Faculty of Electrical Engineering, Faculty of Civil Engineering, Mechanical Faculty), biomedicine and health (Faculty of Medicine), biotechnical sciences (Faculty of Agriculture and Faculty of Food Technology), social sciences (Faculty of Economics, Faculty of Law and Faculty of Teacher Education), and humanistic sciences (Faculty of Arts and Sciences and Evangelical Theology Seminary). Some of institutions in the mentioned scientific areas, and which have the status of authorized provider of the doctoral program, have established inter-faculty and inter-university relations. These include following relations: University of Osijek is closely cooperating with the Ruđer Bošković Institute in Zagreb in the field of natural sciences (biology), biotechnical sciences (agriculture and food processing technology), as well as natural environment protection. Also, the University of Osijek together with the Ruđer Bošković Institute in Zagreb and University of Dubrovnik cooperates in the field of biomedicine and health (medicine), natural sciences (biology), biotechnical sciences (agriculture) and molecular biosciences.

Scientific projects

Based upon the tender for the application of the scientific programs and projects in 2006, university units of the University of Osijek applied 230 scientific projects to the Ministry of Science, Education and Sports. The procedure of scientific project evaluation have been conducted based upon criteria, which are determined according to the scientific priorities in the Republic of Croatia, i.e. criteria of excellence, which take into consideration specific differences of various scientific areas. The Ministry of Science, Education and Sports have approved total of 130 scientific projects to the University of Osijek (table 5). Such a broad palette of the socially accepted projects, which are often united in specific projects offers doctoral students a possibility of immediate involvement in the scientific work as well as it awards them with relevant number of ECTS credits.

Table 4 Scientific projects at the University of Osijek in the academic year of 2006/2007 accepted and financed by the Ministry of Science, Education and Sports

UNIVERSITY UNIT	NUMBER OF PROJECTS
Faculty of Economics	16
Faculty of Electrical Engineering	8
Faculty of Arts and Sciences	15
Faculty of Civil Engineering	5
Evangelical Theological Semminary	1
Faculty of Medicine	27
Faculty of Agriculture	44
Faculty of Law	7
Faculty of Food Technology	13
Mechanical Faculty	11
Faculty of Teacher Education	4
Department of Mathematics	4
Department of Biology	6
Department of Physics	1
Department of Biology	2
TOTAL	**164**

Source: J.J. Strossmayer University of Osijek's Report for the academic year 2006/2007, Osijek, June 2008

4.1. Embedding in institutional strategies and policies – organizational structures

One of the key questions being debated in institutions across Europe, and much discussed during the present project relates to the choice of structures within the institution best suited to providing high quality programs. Organizational structures chosen must demonstrate added value for the institution and for doctoral candidates, in particular in seeking to counteract the isolation of the early stage researcher from other disciplines, or from the larger peer group, or the larger scientific community; to improve transparency, quality, and admission and assessment procedures; create synergies regarding transferable skills development. Different solutions may be appropriate to different contexts and the choice of structure is a matter for each institution, based upon the specific institutional aims which these structures are supposed to meet.

Recent developments and an analysis of practice across Europe points to the emergence of doctoral/ graduate/or research schools in addition to individual training. However, a mix of different organizational types seems to be common practice in most countries. This reflects the need to achieve a critical mass of doctoral candidates in many cases, but also the existence of disciplinary differences that need to be taken into consideration in the organization of doctoral training.

Currently, obtaining doctorate of science (PhD) at the University of Osijek is being practiced after completing the postgraduate study for gaining a master's degree (pre-Bologna system), as well as in the line with the Bologna system which promotes the new way of obtaining PhD degree.

Salzburg Principles 2

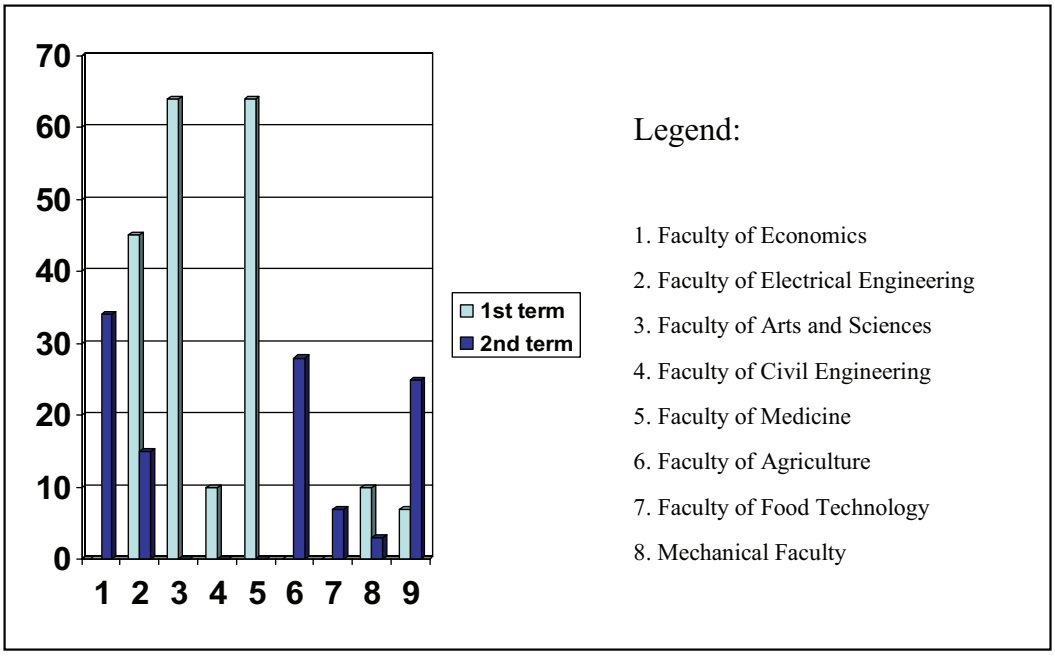
- Embedding in institutional strategies and policies.
- Doctoral training is the core mission of the university.
- University should develop long-term strategies.
- University is responsible for design, structure and organization of doctoral programs.

5. UNIVERSITY POSTGRADUATE DOCTORAL STUDY

The University postgraduate doctoral study in duration of three years according to the Bologna process is the highest level of the education in the Republic of Croatia.[3] Study programs of the postgraduate specialist studies, as well as doctoral programs, are created in accordance with the Act on Scientific Activity and Tertiary Education (National Gazette, No. 123/03), instructions for setting up proposals for postgraduate study programs by Rectors' Assembly, Conclusions of the National Council for Higher Education and forwarded through the Ministry of Science, Education and Sports to the National Council for Higher Education for evaluation. Based upon the Decision of University of Osijek's Senate, altogether eleven (11) doctoral programs have been established in following areas: technical sciences (3), biomedicine and health (1), biotechnical sciences (2), social sciences (2), humanistic sciences (2), as well as two (2) university interdisciplinary doctoral studies in the areas of natural and biotechnical sciences and biomedicine and health and natural sciences.

[3] According to the International Standard Classification of Education (ISCED 97, UNESCO BPE-98/WS/1, November 1997), which is used in international education statistics and enables comparability of data on education at the international level, the doctorate of science (PhD) corresponds to the level 6 ISCED 97.

Graph 1 Candidates enrolled in doctoral programs: 1st term: 2006/2007 and 2nd term: 2008



Source: J.J. Strossmayer University of Osijek's Report for the academic year 2006/2007, Osijek, June 2008

Salzburg Principles 7

- Doctoral programs should operate within appropriate time duration (3-4 years).

The advantages and added value of doctoral programs on University of Osijek may be summarized as follows:

- Define a mission or vision shared by all partners that facilitates the process of turning doctoral candidates into excellent researchers;
- Provide a stimulating research environment and promote cooperation across disciplines;
- Provide a clear administrative structure for doctoral programs, candidates and supervisors, and offering a clear profile and status for doctoral candidates;
- Ensure critical mass and help to overcome the isolation of young researchers;
- Bring junior and senior researchers together;
- Support and facilitate the task of supervising candidates and the role of supervisors;

- Organize admission with transparent rules and regulations;
- Provide teaching and transferable skills training;
- Provide enhanced career development opportunities, including advice on funding opportunities (scholarships, projects);
- Guarantee quality assurance and monitoring;
- Enhance opportunities for mobility, international collaboration and inter-institutional cooperation.

Salzburg Principles 3

The importance of diversity.

- The rich diversity of doctoral programs in Europe is a strength
- Universities should take full responsibility for quality assurance of doctoral programs.

Salzburg Principles 4

Doctoral candidates as early stage researchers.

- The rights and responsibilities of doctoral candidates should be clearly formulated in written agreements signed by candidates, supervisors and institutions.

Reasons to initiate doctoral programs

Each member of the University of Osijek has their own specific reasons for initiating establishment of the doctoral programs which corresponds to the particularities of their own profession.

The common ground for initiating doctoral programs is the awareness that the Republic of Croatia needs even development not only in the economic sense, but also in the area of science and education. Just like the European Union, the Republic of Croatia can have relatively well based and equipped university, which is highly ranked at the European and global level. However, Croatia also must have "regional lions", i.e. the university which will be more modestly ranked at the European ladder of excellence, which represents a crucial base for scientific, educational, cultural and economic development of areas (regions) which gravitates towards that university.

Comparability of the doctoral programs with programs of international higher education institutions

The study program is an autonomous responsibility of the University of Osijek. It is evident that the advancement of the university, scientific-research activity, academic staff, students, equipment, financial power and tradition differ for each university.

Thus, it is necessary to have an open dialogue and adjustment of important elements of the doctoral study programs from same scientific areas at the national and international level.

Supervision and assessment

The crucial question of supervision, monitoring and assessment of doctoral researchers has been a major topic of discussion for universities in the course of this project. Already a major issue in 2005, and included in the Salzburg Principles, it is important that discussion continues, and that universities encouraged and supported in the development and dissemination of good practices in the management of research degrees. Not only recent debates but also the publication of several national evaluation reports shows that there is a great need to develop new supervision practices in doctoral training.

Arrangements need to be developed based upon a transparent contractual framework of shared responsibilities between doctoral candidates, supervisors and the institution, and, where appropriate other partners as mentioned in the Salzburg Principles. Attention should be paid in particular to ensuring: multiple supervision arrangements, the continuous professional skills development of academic staff, and performance reviews of supervisors. Multiple supervision arrangements should be encouraged also at international level through tutoring and co-tutoring by supervisors from academic and research institutions in different European countries.

The importance of ensuring good supervision needs to be properly recognized as a task of staff supervising doctoral candidates, should be included in their workload and task descriptions, and thus also taken into consideration in academic career structures and decisions on promotion. Some universities report that it is useful to develop workload models to ensure that a supervisor dedicates enough time in support of each doctoral candidate.

As doctoral programs change in response to changes in the labor market, thus also the role of the supervisor. This has led to a growing awareness of the importance of ensuring professional skills development for supervisors. This discussion is, however, in its early stages and has not yet begun in many European countries.

Such training is usually organized in an informal way, as one-day-out meetings, based on case studies, discussions, sharing of good practices and experience. Innovative ways of motivating supervisors to introduce effective and high quality practices of supervision also include practices such as annual awards/incentives for the best supervisors.

The final stage of the doctorate, i.e. the assessment of the thesis, is crucial, and assessment procedures should be based on objective and transparent criteria. Due recognition should be given to the original research contribution made by the doctoral candidate. Assessment should be done by an expert university.

Salzburg Principles 5

The crucial role of supervision and assessment.

- Supervision is a crucial part of doctoral training.
- Arrangements for supervision and assessment should be based on transparent contractual framework of shared responsibilities.

Access and admissions

In a fast-changing environment, it is essential to maintain flexibility in admissions to doctoral programs, and full institutional autonomy: diversity of institutional missions and context, and the growing importance of lifelong learning mean that there are good reasons for different access requirements in different institutions and for different programs provided fairness, transparency and objectivity is ensured.

The Bologna commitment that the second cycle gives access (= right to be considered for admission) to the third cycle should be maintained, but access to the third cycle should not be restricted to this route.

Higher Education Institutions need to pay greater attention to the social dimension of the third cycle. Equality of access to the third cycle is a major concern, whether inequality derives from gender, ethnicity, social or other disadvantage.

Salzburg Principles 6

Achieving critical mass.

- Doctoral programs should seek to achieve critical mass.
- Doctoral candidates should have the opportunity to work in research teams and different research environments.

Employability

University recognizes that additional efforts are needed to make employers aware of the enormous efforts which are being undertaken to reform curricula. It will seek to engage more consistently in dialogue with employers, provide better information on the competences and learning outcomes of their graduates and put in place systems to track graduate employment. In conjunction with state and/or private agencies, they will address the question of how to provide more systematic career guidance support and services to their students. Both institutions and governments should translate this broadly accepted policy commitment into action. Governments are urged to adapt their own public sector employment structures to take into account the new degree structures.

- Doctoral program is changed as the answer to the changes at the labor market. Also, the supervisor's role is being changed, which emphasis the importance of the supervisor's professional skill.
- Employability is the key notion in the changing world, which is defined as a set of skills, knowledge and personal traits, which give an individual greater security and enable a success in businesses, which will bring benefits not only to the individual but to his/her job, community and the economy as whole.

University-enterprise collaboration

For many years, universities have fostered extensive and successful collaborations with business enterprises. More effective collaboration between universities and industry is vital to enhancing innovation and promoting greater competitiveness in Europe. Based on its members' experience, EUA launched its Responsible Partnering Initiative at the European Business Summit in Brussels on 17 March 2006 with the aim to widen consultation with stakeholders on the further development of the "Responsible Partnering" guidelines and to seek to promote their broad implementation.[4]

University of Osijek's members find their partners in realizing the doctoral study mostly within the units of local and regional self-government of the Eastern Croatia, whose center is Osijek, as well as among companies which are not only from the region but also from the broader area.

Embeddiness of doctoral programs in the institutional strategies for increasing internationalization

Doctoral programs are key components in a discussion about European higher education in the global context, while at the institutional level they serve to attract good doctoral candidates from the world, encouraging mobility within doctoral programs.

For smaller countries and their institutions, the mobility may be a mean of training their own young researchers in disciplinary and trans-disciplinary research if the own environment lacks these capacities.

Internationalization within a university, particularly at the doctoral level is important and should not be forgotten. Doctoral study itself is international in its nature. That is achieved, for example, through engaging international academic staff, organization of international workshops and conferences, summer schools, etc. Naturally, teleconferences, e-learning and the like are also considered.

[4] For more details see European University Association: Responsible Partnering: Collaborative Research Between Universities and Industry, http://www.eua.be/research/responsible-partnering/

Institutional strategy for doctoral program advancement

All university units that offer doctoral program, according to the Statute and the Bylaw that regulate suggested study program, are responsible within their responsibility and authority to strategically think, discuss and make recommendations for further advancement of the suggested doctoral program, as well as for the innovativeness of the doctoral program.

Salzburg Principles 8

The promotion of innovative structures.

- Transferable skills such as:
  - presentation and writing;
  - project and time management;
  - team work;
  - human and financial resources management;
  - doctoral programs should reflect interdisciplinary approach.

Mobility

Although there are still major deficits in capturing reliable information on mobility, many institutions have a general perception that student mobility is increasing. It is important, however, to distinguish between forms of mobility-within countries and between countries, within degree cycles and between degree cycles, and within organized mobility programs or as „free movers".

In its initial phase of conducting the doctoral program in accordance with Salzburg Principles, the University in Osijek does not still record positive results in the inflow of foreign students, but the academic community of the University of Osijek does enable its doctoral candidates, through funding policy, learning possibilities that takes place outside a national environment. In many cases, there are international professors engaged in the doctoral programs, who transfer their knowledge and expertise to the students, as well as they actively discuss the socio-economic issues of the environments and areas they come from. Also, students are encouraged and provided with the opportunity to spend some time in research centers abroad. Because of the importance attached to mobility as an essential characteristic of the European Higher Education Area, an increased effort needs to be made to encourage academics to accept the long established principle of "mutual trust and confidence" in the recognition of learning and qualifications offered by others.

Salzburg Principles 9

Increasing mobility.

- Doctoral programs should provide mobility to doctoral candidates.

Increasing and diversifying funding streams

There is a huge diversity of public funding mechanisms across Europe which vary enormously in volume, legal base, methodology, policy, thrust, and in degree to which central authorities control institutional budgets

Due to the extreme importance of the postgraduate doctoral study for the existence and progress of the higher education in Croatia, postgraduate studies need to be a priority of state authorities and that is why they have been financed to the most part by the means of state budget, which does not exclude the possibility and need to use other sources of financing. The postgraduate doctoral studies for scientific novices and teaching assistants are financed by the Ministry of Science, Education and Sports in a way that they are employed by the institution in which the scientific project is registered and within such a project the doctoral thesis is being defined and written. The second type of institutional financing comes from study fees.

Salzburg Principles 10

Ensuring appropriate funding.

- Institutions and governments should provide sustainable financing of doctoral programs.
- Doctoral candidates are not just fee-paying students who bring an income for the institution, but should be also considered junior research and teaching staff who contribute to the creation of new knowledge.

Quality of Doctoral Programs

Quality processes and Institutional mission should encourage a culture of risk-taking which attaches greater importance to success than to failure, in order to produce an institutional milieu favorable to creativity, knowledge creation and innovation. Universities reconfirm their commitment to continuous quality development and improvement in all aspects of their institutional mission. Institutional quality processes should be based on, as well as should adequately reflect, institutional values and mission. External and internal quality systems should take into account these aspects as

starting points of any evaluation. The quality is directly understood under the national and internal regulations of programs.

University in Osijek is highly equipped with PC and doctoral students may have a free access to internet. Roles of doctoral supervisors are regulated according to national and internal regulations of doctoral studies. Doctoral supervisors organize studies of doctoral candidate and supervise researches. Doctoral supervisor my have not more than 3 doctoral candidates.

6. IN LIEU OF CONCLUSION

There are four important aspects for the Josip Juraj Strossmayer University of Osijek and our region that are playing an important role in developing modern doctoral schools meeting society's needs:

1. Establishment of knowledge-based society needs the valuation of top specialists with doctoral degree in all the fields across society. The doctoral degree can be valued by creating a flexible career path, i.e. the possibility of favorable career switching between academic sector, public sector and industry.
2. The increase in doctoral studies can only be based on increase of research activities. In order to quadruple the number of new PhDs, it necessary at least to double the volume of research activities by involving support from the state, from the future employers of the PhDs as well as from the support foundations.
3. To guarantee the quality of increasing and diversifying doctoral studies, it is important to monitor the acquisition of theoretical knowledge and skills necessary for research activities as well as the level of research paper and PhD dissertations.
4. Strengthening the relationship between governments, higher education institutions and other stakeholders is essential to anchor and sustain the goals of Bologna process. One major priority must to be broaden debate with employers, students, parents and other stakeholders, and thus enhance trust and confidence in the quality and relevance of institutional engagement

University of Osijek is committed to continue this debate with its university units, partners and other stakeholders, as well as to provide the necessary support to its members, in particular through the establishment of a permanent framework for the further development, cooperation and exchange a good practice between doctoral programs and doctoral schools across Europe's universities.

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Abstract

This paper reviews some statistical data of Josip Juraj Strossmayer University of Osijek, which point out the fact that the University has a good potential of conducting doctoral programs. Ten Salzburg Principles on doctoral programs, that provide the basis for Bergen Communiqué text, have been also used as the foundation for the University's doctoral program.

The unique character of the third cycle driven by its core component - the advancement of knowledge through research - needs to be recognized within the Bologna process. At the same time implementation of the three Bologna cycles should be seen as a whole, and the inclusion of research component as well as of transferable skills development ensured also in the first and second cycles.

Josip Juraj Strossmayer University of Osijek accepts its responsibility for embedding doctoral programs in institutional strategies and policies. Being a regional university, it contributes to the (regional) human capital development, which is an irreplaceable variable in the function of (regional) development.

Key words: *Doctoral programs, region, employability*